

Chapter

4



Lighting for Photography

Lighting plays an important role in how we view objects. The texture and depth of an object shows variation, as the intensity and type of light changes. Special effects in animation depend significantly on lighting, as it changes the way the object is presented with the help of tones, contrast and hues. Lighting is the work of a separate department in a big animation studio. However, as a Texturing Artist, an individual must know how to create mood and visual shaping through lighting. Specific lighting scenarios, including character lighting, environment lighting and lighting an animated sequence must be mastered by those aspiring to become a Texturing Artist.

SESSION 1: EFFECTIVE LIGHTING FOR PHOTOGRAPHY

You have learned about camera angles and camera movements. Here, you will be learning about the basics of photography, including its principles. The brightest light comes from the Sun, which is a white light source and generates sharp-edged shadows. The second source of light is the blue sky. As a result, it has soft shadows (which are completely masked by the direct light coming from the Sun). Smaller the source of light, the harder the shadows.

Lighting is deliberately used to attain an aesthetic objective. Some of the objectives which are attained with lighting are as follows:

- Establishing a setting
- Setting a visual style
- Creating visual interest
- Enhancing or creating the mood of a scene
- Directing the eye
- Creating the illusion of depth
- Creating the illusion of volume
- Revealing the substance and qualities of materials
- Maintaining continuity
- Integrating visual elements

Sources of Light for Photography

Natural light refers to sunlight or daylight, while artificial light refers to all kinds of light sources, including fluorescent lights, electric lights, flash, and so on. Factors, like time of the day, weather, location and air pollution affects the use of natural light for photography.

The best infrared photographs therefore tend to be captured in direct sunlight. There are four main sources of artificial light for photography—

- (i) Incandescent: This lighting ranges from the common light bulb to large tungsten 'hot lights' used in the studio. They are warm in colour and temperature, as compared with natural daylight. Halogen bulbs are colder and produce a light that is blue in colour, while tungsten bulbs, being hotter, produce light with a reddish hue.
- (ii) Fluorescent
- (iii) Light Emitting Diode
- (iv) Studio strobe: Strobe lighting is probably the most common used artificial lighting in photography. Strobe lighting is not suitable for video, as the duration of the flash is too short.

Choice of Type of Light

The choice of the type of light to be used, depends on the type of photography, the subject, and the desired



NOTES

effect. Hard light produces well-defined, dark shadows and tends to originate from a single light source, which is usually either small or located far away. Hard light can be used to create images with sharp contrast and highlights, emphasising the shape and texture. It can be used to enhance the 3D effect of an image and in general, to create dramatic effects. Soft light, on the other hand, produces either soft shadows or no shadows at all. It can be generated from several light sources, by diffusing light using some kind of barrier or by reflecting light from different surfaces so that the subject is hit by the light from various angles. The action of reflecting light essentially turns the reflector into a secondary light source. All kinds of things can be used as reflectors, whether shooting indoors or outdoors. These include professional photo light reflectors or just sheets of paper.

The narrower the source, the harder the light. A broad light source lessens shadows, reduces contrast and suppresses texture. The farther the source, the harder the light.

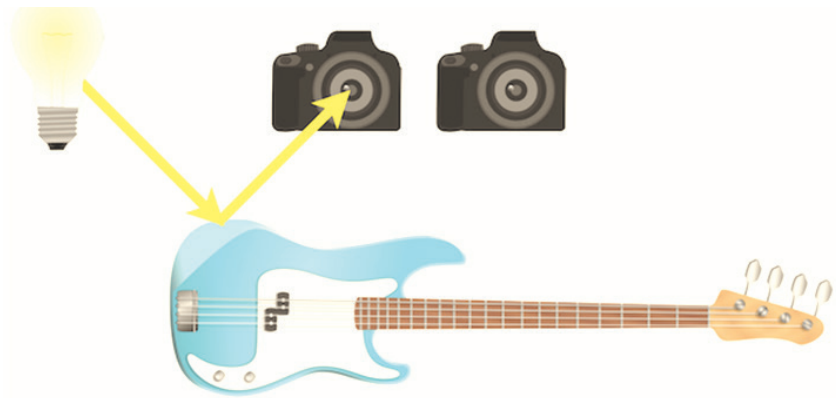


Fig. 4.1: Phase angle

Angle of Light

The angle of light should be taken into careful consideration for creating a specific effect. The angle from the light source (e.g., the sun) to the object or subject and then to the camera is called the 'phase angle'. The angle of incidence of the light source (e.g., the sun) on an object or the subject along with the phase angle sets the shading. The larger-scale shading is important from the point of view of showing the form. The smaller-scale shading is

important for showing texture. The various phase angles have been summarised in the table given below:

Angle of light (degrees)	Position of light	Example
0	Front, with no shadows	Sun is behind your back
45	Front, with small shadows	————
90	Side	Sun is on your side
135	Side and back	Transmitted light from subjects
180	Back	Transmitted light and diffracted light

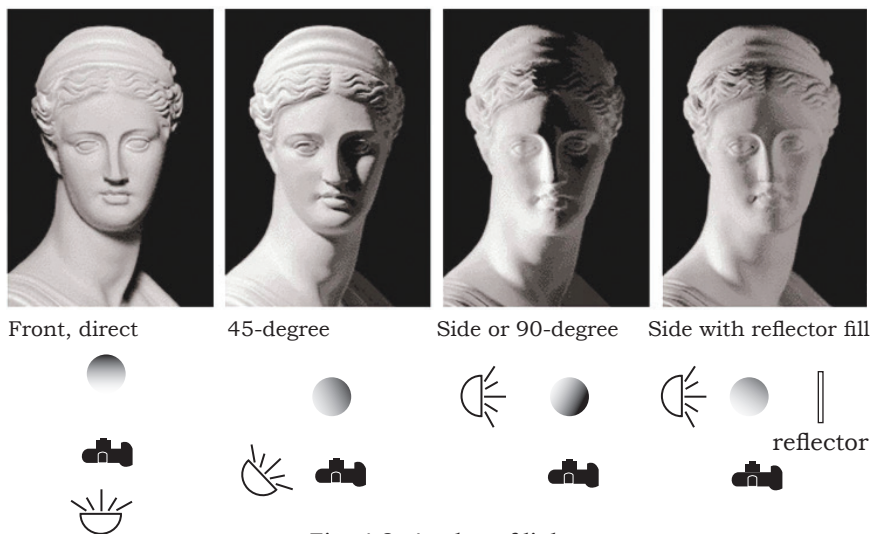


Fig. 4.2: Angles of light

Bounced Light

When light hits a surface, it either bounces back or is absorbed by it. For example, the colour of the wood is enhanced by the fact that light of the same colour is reflecting onto it. The result is that the coloured light and the underlying surface combine to create a glowing and saturated version of the wood's existing colour. Direct flash is harsh, but if you use bounce flash, it re-directs the light to bounce off an object and back to the subject. Soft light tends to wrap around objects, projecting diffused shadows with soft edges.

High key images

High key photography uses unnaturally bright lighting to blow out most or all harsh shadows in an image. It

generally involves using extra lights. High key lighting is often soft and the detail is generally low. High key lighting can be seen in fog and snow, where even shadows are light due to the amount of reflected light bouncing around.



Fig. 4.3: High key image



Fig. 4.4: Low key image

Low key images

Low key images have very little light in them. A low key image contains predominantly dark tones and colours.

White Balance

Each source of light possesses a different colour temperature. A digital camera can measure the colours in the red, green, and blue light of the spectrum. Since different sources of light have different colour hues, a picture taken with a normal white balance under artificial lighting conditions transmits the low heat to the camera's sensor. A light having higher colour temperature will have more blue light or larger Kelvin value, as compared to lower light, which has a smaller Kelvin value. An image taken under tungsten bulb without adjusting the digital camera for white balance produces a dull orange shade. An image taken under the fluorescent lighting produces a brighter bluish cast. By adjusting the white balance setting of your digital camera, you can alter the required light or temperature to produce the most accurate colours in a digital image. The pre-set modes for white balance settings are as follows:

Auto — It helps in adjusting the white balance automatically according to the different lighting conditions.



Tungsten — It is used for light under a little bulb, and it is often used while shooting indoors.

Fluorescent — It is used for getting brighter and warmer shots while compensating for the cool shade of fluorescent light.

Daylight — It is for the normal daylight setting while shooting outdoors.

Cloudy — It is ideal for shooting on a cloudy day. This is because it warms up the subject and surroundings and allows you to capture better shots.

Flash — It is required when inadequate lighting is available.

Shade — This mode generally produces cooler or bluer pictures.

Practical Exercises

Activity 1

Creating a scene with light bounce and shadows

Material required

Computer, Adobe Photoshop software

Procedure

- Create a digital graphic with a blank canvas of size 800 × 600 pixels; Resolution: 150 pixels/inch; White background and RGB default colour mode. Import any Digital Photograph, resize by scaling it and create a scene. Now, apply various highlighting and image enhancing techniques and create a scene with:
 1. Light bounces (from the solid wall, building, reflecting surface)
 2. Prominent shadows (of a building or tree).
- Save the file in JPG and PSD format to compare it with the previous composition.

Activity 2

Creating a scene with high and low key

Material required

Computer, Adobe Photoshop software

Procedure

- Create a digital graphic with a blank canvas of size 800 × 600 pixels, Resolution: 150 pixels/inch, White background and RGB default colour mode



NOTES

- Import any one digital photograph, resize by scaling it and create a scene. Now, apply various lighting, image editing techniques and create a scene with:
 1. **High key**
 2. Some portion (background or sky) with **low key setting**
- Save the file in JPG and PSD format to compare it with its previous composition.

Check Your Progress

A. Fill in the Blanks

1. Red light has a _____ wavelength compared to blue light.
2. The Sun's light glows red at sunset because the _____ wavelength blue colour gets lost due to scattering.
3. An object which is having _____ colour will reflect all wavelengths equally when light hits the surface.
4. An object which is having _____ colour will absorb all light when light hits the surface.
5. When white light hits a red surface, the _____ and _____ lights are absorbed and red light is reflected.
6. Radiance is, usually, a subtle effect and a great deal of _____ is required to make it apparent.

B. Subjective Questions

1. Explain in brief, the following terms related with colours:
 - (a) High Key
 - (b) Low Key
2. Why is the sky blue?

What Have You Learnt?

On completion of this Session, you will be able to:

- describe the basic qualities of light (intensity, contrast, direction and diffusion).
- demonstrate the use of different types of lighting effects on images.
- identify different types of light and settings for photography.
- differentiate between high key and low key images.

